

AMENDMENTS TO THE CLAIMS

Claims 1-19 (CANCELED)

20. (ORIGINAL) A device for connecting an attachment rod and a pedicular plug in a transpedicular vertebral attachment system, said device comprising:

a generally cylindrical, C-shaped member having two ends which form an opening therebetween, the C-shaped member further having a centrally disposed opening, a ball joint being housed in said centrally disposed opening of the C-shaped member, the attachment rod being housed in the ball joint, the ball joint being in direct engagement with the attachment rod;

a pair of hollow cylinders, one of the cylinders being attached to each end of the C-shaped members, a screw being received in both of the hollow cylinders, the screw being received insertable in the pedicular plug; and

a means, preferably a nut, for locking the screw in position in the pair of hollow cylinders.

21. (ORIGINAL) The connecting device according to claim 18, wherein the ball joint has a diamond point finish in direct contact with the attachment rod.

22. (ORIGINAL) A dorsolumbar and lumbosacral vertebral fixation system, wherein the system consists of one or various connectors or couplings (111), a rod (112), a

transversal traction device and means of vertebral fixation, with assembly carried out by the attaching the tail (114) of the vertebral element - coupling (111) - rod (112), the first assembly stage of the system being the introduction of the fixation elements, either to the pedicle or the vertebral laminae, a second stage of the insertion of the rod (112) through the connectors (111), and a third stage in which the connectors are connected to the tails (114) of the fixation elements by means of locknuts (120).

23. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the connectors (111) are made up of an annular body (121) and two clamp elements (122) with the insertion of an open swivel (113) inside the annular body (121).

24. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein, with the clamp (122) open in its natural position, the swivel (113) turns freely in its housing, preferably with three degrees of freedom, in a radius exterior to the swivel (113) slightly smaller than the inside of the ring (121) of the clamp, both being concentric radii.

25. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the open clamp (122) has a transversal circular orifice into which the tail (114) of the fixation elements is inserted.

26. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the open clamp (122) has an adjustable transversal orifice (123) that allows for different tail (114) positions of the vertebral fixation elements.

27. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the open swivel (113) is hollow with a circular shape (125) through which the rod (112) passes.

28. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the exterior surface of the swivel (113) has a rough finish, which allows for better contact between surfaces when tightened.

29. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the screw tightness of the tail (114) of the vertebral fixation element on the clamp (122), closes the body of the clamp which, in turn, closes the swivel (113) opening-slot (124), thus tightening onto the previously oriented rod (112), fixing it in place.

30. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein, as a vertebral fixation element, an expansion screw (116) is used, this being a hollow pedicle screw, smooth on the inside, through which a pin (128) is passed.

31. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the screw head has an interior thread in order to house, threaded in, the Allen-type screw of the screw head (130) of the pin (128).

32. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the expansion screw consists of lengthways slots (127), which start towards the middle of its threaded length, and which are opened by fully inserting the pin (128).

33. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claims 22, wherein the diameter of the lower third of the expansion screw (116), when the pin is fully inserted, progressively increases towards the end, until it reaches its maximum at the tip, between 20 and 30% when completely expanded.

34. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the expansion screw (116) is used in cases of osteoporosis vertebrae, reinterventions and for the sacral vertebrae, in order not to penetrate the anterior cortical layer.

35. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein prior to the insertion of the expansion screw (116) the bone is tapered to the same thread as the external thread of the expansion screw.

36. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein the expansion screw (116) consists of a lengthways interior hollow conduit, with an internal taper (129) towards the end, in such a way that when the pin is inserted (128), without making up the head (130) the tip of this pin reaches the said inclined plane (129).

37. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein, when the head (130) of the pin (128) is made up on the tail (114) of the expansion screw (116) the tip of the pin (128) opens the internal taper (129) forcing the slots (127) of the screw (126) to open out, expanding the screw against the sponginess of the vertebral body.

38. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein, as a fixation element a laminar (131) hook (115) is used, which couples onto the vertebral lamina by means of a hook finger and is screwed to the coupling (111) at the top.

39. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein, as a vertebral fixation element a pedicle (132) hook (115) is used, which couples onto the pedicle of the vertebra by means of a concave shape on the finger of the hook, and is screwed to the coupling (111) at the top.

40. (ORIGINAL) The dorsolumbar and lumbosacral vertebral fixation system, as in claim 22, wherein, as a fixation element an open tail (118) hook (115) is used, as a top connection directly to the rod (112), being closed and attached by means of a locknut (120) and a locking setscrew (119).